ABSTRACT OF THE DISCLOSURE

Methods, including culture media conditions, which provide for *in vitro* human stem cell division and/or the optimization of human hematopoietic progenitor cell cultures and/or increasing the metabolism or GM-CSF secretion or IL-6 secretion of human stromal cells and/or a method for assaying the effect of a substance or condition on a human hematopoietic cell population, and/or depleting the malignant cell or T-cell and B-cell content of a human hematopoietic cell population are disclosed. The methods rely on culturing human stem cells and/or human hematopoietic progenitor cells and/or human stromal cells in a liquid culture medium which is replaced, preferably perfused, either continuously or periodically, at a rate of 1 ml of medium per ml of culture per about 24 to about 48 hour period, and removing metabolic products and replenishing depleted nutrients while maintaining the culture under physiologically acceptable conditions. Optionally, growth factors are added to the culture medium. The disclosed culture conditions afford improved methods for bone marrow transplantation.